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GERALD LEVY, ESQ.
KANE, DALSIMER, SULLIVAN, KURUCZ
LEVY, EISELE AND RICHARD
711 THIRD AVENUE
NEW YORK, NY 100174059

EXAMINER
TRAN, DOUGLAS Q

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-23_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-23_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _27 August 1999_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All b) ☐ Some * c) ☒ None of:

   1. ☒ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

   a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6) ☐ Other: .

DETAILED ACTION

Priority

1.   Acknowledgment is made of applicant's claim for foreign priority based on an application

filed in Japan on 08/28/1998 and 08/31/1998. It is noted, however, that applicant has not filed a

certified copy of the foreign application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United
> States before the invention thereof by the applicant for patent, or on an international application by another who
> has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention
> thereof by the applicant for patent.

3.   Claims 16, 18 and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by

Samuels (US Patent No. 5,937,225).

        As to claim 16, Samuels teaches notifying method of notifying a user of an ink amount,

the notifying method comprising the steps of:

        (a) converting image data into print data (col. 3, lines 28-29 and 35-36: the formatting

entity 31 generates a printer specific stream of bits that represents the print data);

        (b) predicting a required ink amount indicating an ink amount required by a printer for

performing print operations, the print operations being performed for forming a print image on

recording medium based on the print data (col. 3, lines 40-44: the pixel count of the print data is indicative of the required toner usage when actually printing the print job on the printer);

(c) detecting a remaining ink amount indicating an ink amount remaining in the printer; (col. 3, lines 56-62: the global pixel count entity 33 in fig. 2 for automatically receiving signal of the remaining toner in the cartridge from the printer);

(d) comparing the required ink amount with the remaining ink amount (col. 4, lines 5-7 and 15-17);

(e) determining whether or not the remaining ink amount is sufficient for the printer to perform the print operations (col. 4, lines 5-7 and 12-14: the remaining ink amount from information of the global pixel count is determined by the comparator, this procedure is processed with the print job at the global pixel count entity 33, the print job is not yet transferred to a printer for print operating); and

(f) notifying a user of a determination result of the step (e) (col. 4, lines 5-11).

As to claim 18 , Samuels teaches preview data based on the image data, and predicting the required ink amount based on the preview data (col. 3, lines 38-44).

As to claim 20, Samuels teaches the step of (o) determining whether or not ink needs to be replenished; and notifying a user that the ink needs to be replenished when it is determined in the step (o) that ink needs to be replenished (col. 4, lines 12-14).

As to claim 21, Samuels teaches the step of (q) resetting the level of ink when ink is refilled or replaced (col. 3, lines 59-61).

As to claim 22, Samuels teaches detecting a condition of the printers and notifying the user of the condition of the printers (col. 2, lines 24-26 and col. 4, lines 25-28).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 17, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Samuels, are applied above in view of claim 16, in combination with Garr et al. (US Patent No.

5,802,420).

As to claim 17 and 19, Samuels teaches of calculating the average tone of pixels on the

preview data, and average density of print image and calculating the required ink amount for an

entire print region with the average density at an actual print size (col. 3, lines 37-53).

However, Samuels does not teaches of determining how much ink is short when it is

determined that the remaining ink amount is not sufficient, and notifying the user of how much

ink is short; and displaying a preview image based on the preview data, based on the image data,

and predicting the required ink amount based on the preview data.

Garr teaches determining how much ink is short when it is determined that the remaining

ink amount is not sufficient, and notifying the user of how much ink is short; and displaying a

preview image based on the preview data, based on the image data, and predicting the required

ink amount based on the preview data (see fig. 7, col. 18, lines 15-37).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the print system of Samuels for displaying the a preview image to

determine the remaining ink amount and how much ink is short as taught by Garr. The

suggestion for modifying the system of Samuels can be reasoned by one of ordinary skill in the

art as set forth by Garr because the printing system of Samuels is modified based on the teaching

of Garr would improve the printing system that predicts how many pages can be printed before

the toner or ink cartridge becomes empty, and also predicts how much time remains before this

toner or ink cartridge becomes empty (lines 1-4 in abstract).

As to claim 23, Samuels teaches based on the remaining ink amount and the condition of

the print operations, automatically selecting one of a plurality of printers to which the print data

is transmitted (note: since the printing system including a plurality of printers in the network, the

server automatically selects one of printers based on the condition of printers that is well known

in the prior art "col. 2, lines 25-28).

6.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination

of Samuels and Garr et al. (US Patent No. 5,802,420).

As to claim 15, Samuels teaches a predicting method for predicting a required ink

amount required by a printer for performing print operations,

determining an average tone of pixels of an image and based on the average tone,

calculating an average density of a print image to be printed (col. 3, lines 45-54: a weighting

factor of the pixel count in the print data is determined);

detecting an ink amount required for printing an entire region with the average density at

an actual size (col. 3, lines 37-42).

However, Samuels does not teach of generating preview data based on image data.

Garr teaches of predicting the required ink amount based on the preview data (see fig. 7,

col. 18, lines 15-37).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the print system of Samuels for displaying the a preview image to

determine the remaining ink amount and how much ink is short as taught by Garr. The

suggestion for modifying the system of Samuels can be reasoned by one of ordinary skill in the

art as set forth by Garr because the printing system of Samuels is modified based on the teaching

of Garr would improve the printing system that predicts how many pages can be printed before

the toner or ink cartridge becomes empty, and also predicts how much time remains before this

toner or ink cartridge becomes empty (lines 1-4 in abstract).

7.   Claims 1, 3, 6 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

the combination of Samuels and Yano et al. (US Patent No. 6,476,926) and/or Owa et al. (US

Patent No. 6,348,971).

As to claim 1, Samuels teaches a printing system comprising:

a terminal that generates image data (a test processor or an application program 30 in fig.

2 generating a finished document in col. 3, lines 28-29);

at least one printer (10 in fig. 2) that performs print operations for forming an image on a

recording medium using on ink based on print data; and

a printer controller (printer server, col. 15-17) that is connected between the terminal and

the printer and converts the image data into the print data (col. 3, lines 28-29 and 35-36),

wherein the printer controller comprises:

- predicting means (32 in fig. 2) for predicting a required ink amount indicating an

amount of ink required (i.e., toner usage) for the printer to perform the print operations based on

the print data (col. 3, lines 40-44: the pixel count of the print data is indicative of the required

toner usage when actually the print job on the printer);

- a memory (32 in fig. 2) that stores required ink amount data indicating the required ink

amount;

the printer transmitting the ink amount data to the server (col. 3, lines 61-62);

at least one of the terminal (30 in fig. 2) and the printer controller (35 in fig. 2)

comprises:

receiving means for receiving the remaining ink amount data from the transmitting means

of the printer (col. 3, lines 56-62: the global pixel count entity 33 in fig. 2 for receiving signal of

the remaining toner from the printer);

retrieving means for retrieving the required ink amount data stored in the memory (the

pixel count is retrieved in order to compare with the information of condition of the printer in

col. 3, lines 64-65);

determination means for determining based on the remaining ink amount data and the

required ink amount data, whether or not the remaining ink amount is sufficient to perform the

print operations, before the print operations are started (col. 4, lines 5-7 and 12-14: the

remaining ink amount from information of the global pixel count is determined by the

comparator, this procedure is processed with the print job at the global pixel count entity 33, the

print job is not yet transferred to a printer for print operating); and

notifying a user of a determination result of the step (e) (col. 4, lines 5-11).

However, Samuels does not explicitly teach transmitting means of the server for transmitting the request signal of the remaining ink amount data to the printer in which the printer managing the remaining ink amount data.

Yano teaches the communication between a host and a printer is established based on the information of the remaining amount of ink in which the host transmits the request signal of the remaining amount of ink to the printer (see fig. 5 and 9; col. 3 and 15-17 and step of S2 in fig. 20).

Furthermore, Owa teaches the communication between a server and a printer is established based on the information of the remaining amount of ink in which the status monitor section (13 in fig. 2) of the server (col. 17, lines 44-51) can gather the status of the printers including remaining ink/toner amount (see fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the print server of Samuels for collecting the remaining ink/toner amount data from exchanging the data with the printer as taught by either Yano or Owa. The suggestion for modifying the server of Samuels can be reasoned by one of ordinary skill in the art as set forth by either Yano or Owa because the server of Samuels is modified by teaching of either Yano or Owa would allow the user or the operator in the server or the host computer to keep track the conditions of the printer every time the print job is generated. The motivation for Owa is described in column 2, lines 1-10 and the motivation for Yano is described in column 2, lines 45-51.

As to claim 3, Samuels teaches the transmitting means of the printer controller repeatedly transmits the request signal at a predetermined interval (col. 3, lines 61-62).

As to claim 6, Samuels teaches the step of determining whether or not ink needs to be

replenished; and notifying a user that the ink needs to be replenished when it is determined in the

step that ink needs to be replenished (col. 4, lines 12-14) and step of resetting the level of ink

when ink is refilled or replaced (col. 3, lines 59-61).

As to claims 13 and 14, Samuels teaches the printer controller (i.e., printer server, col.

15-17) connected between a terminal (i.e., a test processor or an application program 30 in fig. 2)

and a printer (10 in fig. 2) , the terminal generating image data (i.e., a finished document, col. 3,

lines 28-29), the printer transmitting remaining ink amount data indicating an amount of ink

remaining (i.e., toner usage) in the printer to external device (col. the global pixel count is

indicative of the toner usage from the printer is transmitted to a global pixel count entity 33), the

printer controller comprising:

converting means (i.e. formatting 31 in fig. 2) for converting the image data into the print

data (col. 3, lines 28-29 and 35-36: the formatting entity 31 generates a printer specific stream of

bits that represents the print data);

predicting means (32 in fig. 2) for predicting, based on the image data, a required ink

amount (i.e., toner usage) indicating an ink amount required by the printer for performing the

print operations based on the print data (col. 3, lines 40-44: the pixel count of the print data is

indicative of the required toner usage when actually printing the print job on the printer);

receiving means for receiving the remaining ink amount data from the printer (col. 3,

lines 56-62: the global pixel count entity 33 in fig. 2 for automatically receiving signal of the

remaining toner in the cartridge from the printer);

determination means for determining, before the print operations start, whether the

remaining ink amount is sufficient for the printer to perform the print operations (col. 4, lines 5-

7 and 12-14: the remaining ink amount from information of the global pixel count is determined

by the comparator, this procedure is processed with the print job at the global pixel count entity

33, the print job is not yet transferred to a printer for print operating);

notifying means for notifying a user of determination results determined by the

determination means (col. 4, lines 5-11).

However, Samuels does not explicitly teach transmitting means of the server for

transmitting the request signal of the remaining ink amount data to the printer.

Yano teaches the communication between a host and a printer is established based on the

information of the remaining amount of ink in which the host transmits the request signal of the

remaining amount of ink to the printer (see fig. 5 and 9; col. 3 and 15-17 and step of S2 in fig.

20).

Furthermore, Owa teaches the communication between a server and a printer is

established based on the information of the remaining amount of ink in which the status monitor

section (13 in fig. 2) of the server (col. 17, lines 44-51) can gather the status of the printers

including remaining ink/toner amount (see fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the print server of Samuels for collecting the remaining ink/toner

amount data from exchanging the data with the printer as taught by either Yano or Owa. The

suggestion for modifying the server of Samuels can be reasoned by one of ordinary skill in the

art as set forth by either Yano or Owa because the server of Samuels is modified by teaching of

either Yano or Owa would allow the user or the operator in the server or the host computer to

keep track the conditions of the printer every time the print job is generated. The motivation for

Owa is described in column 2, lines 1-10 and the motivation for Yano is described in column 2,

lines 45-51.

8.   Claims 2, 4, 5, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Samuels,Yano and/or Owa, are applied in view of claim 1, in combination with Garr.

        As to claims 2, 4, 7 and 8, the combination of Samuels, Yano and/or Owa teaches every

feature in claim 1.

        However, the combination of Samuels, Yano and/or Owa does not teach notifying means

for notifying the user of how much ink is short and predicts the required ink amount based on the

preview data.

        Garr teaches determining how much ink is short when it is determined in the step of that

the remaining ink amount is not sufficient, and notifying the user of how much ink is short; and

displaying a preview image based on the preview data, based on the image data, and predicting

the required ink amount based on the preview data on the graph in the window (see fig. 7, col.

18, lines 15-37).

        It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the print system of Samuels, Yano and/or Owa for displaying the

a preview image to determine the remaining ink amount and how much ink is short as taught by

Garr. The suggestion for modifying the system of Samuels, Yano and/or Owa can be reasoned by

one of ordinary skill in the art as set forth by Garr because the printing system of Samuels, Yano

and/or Owa is modified based on the teaching of Garr would improve the printing system that

predicts how many pages can be printed before the toner or ink cartridge becomes empty, and also predicts how much time remains before this toner or ink cartridge becomes empty (lines 1-4 in abstract).

As to claim 5, Garr teaches determining how much ink is short when it is determined in the step (e) that the remaining ink amount is not sufficient, and (h) notifying the user of how much ink is short; and displaying a preview image based on the preview data, based on the image data, and predicting the required ink amount based on the preview data (see fig. 7, col. 18, lines 15-37).

As to claim 9, Owa teaches detecting a condition of the printers and notifying the user of the condition of the printers (fig. 4).

As to claim 10, Owa teaches based on the remaining ink amount and the condition of the print operations, automatically selecting one of a plurality of printers to which the print data is transmitted (col. 2, lines 20-25).

9.   Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuels, Yano and/or Owa, are applied above in view of claim 1, in combination with Brown, Jr. et al. (US Patent No. 5,970,275).

As to claims 11 and 12, the combination of Samuels, Yano and/or Owa teaches every feature in claim 1.

However, the combination of Samuels, Yano and/or Owa does not teach the printer determines whether or not the remaining ink amount is sufficient for each of the different colors.

Brown teaches the printer determines whether or not the remaining ink amount is sufficient for each of the different colors (col. 2, line 50 to col. 3, line 8).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the system of Samuels, Yano and/or Owa for determining whether

or not the remaining ink amount is sufficient for each of the different colors as taught by Brown.

The suggestion for modifying the system of Samuels, Yano and/or Owa can be reasoned by one

of ordinary skill in the art as set forth by Brown (col. 2, line 50 to col. 3, line 8) because the

printing system of Samuels, Yano and/or Owa is modified based on the teaching of Brown would

allow the user in the host device to keep track the accurately status of the remaining amount of

toners in the color printers in the network (col. 1, line 66 to col. 2, line 2).

Contact Information

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Douglas Q. Tran whose telephone number is (703) 305-4857 or
E-mail address is Douglas.tran@uspto.gov.

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Douglas Q. Tran
Dec. 30, 2002

SCOTT ROGERS
PRIMARY EXAMINER